

MELTLESS PREPARATION OF MARTENSITIC STEEL ARTICLES
HAVING THERMOPHYSICALLY MELT INCOMPATIBLE
ALLOYING ELEMENTS

ABSTRACT OF THE DISCLOSURE

An article of iron base metal base metal alloyed with an alloying element is prepared by mixing a chemically reducible nonmetallic base-metal precursor compound of the iron base metal and a chemically reducible nonmetallic alloying-element precursor compound of an alloying element to form a compound mixture. The alloying element is preferably thermophysically melt incompatible with the iron base metal. The method further includes chemically reducing the compound mixture to a metallic alloy, without melting the metallic alloy, and thereafter consolidating the metallic alloy to produce a martensitic-composition consolidated metallic article, without melting the metallic alloy and without melting the consolidated metallic article.